We claim:

1. An organic position sensitive detector comprising:

a first electrode, wherein the first electrode is resistive and has a first point and a second point;

a first contact in electrical contact with the first point on the first electrode;

a second contact in electrical contact with the second point on the first electrode;

a second electrode disposed near the first electrode;

a donor semiconductive organic layer disposed between the first electrode and the second electrode; and

an acceptor semiconductive organic layer disposed between the first electrode and the second electrode and adjacent to the donor semiconductive organic layer,

wherein a hetero-junction is located between the donor layer and the acceptor layer,

and at least one of the donor layer and the acceptor layer is light absorbing.

2. The detector of claim 1, wherein the first electrode is an anode.

3. The detector of claim 1, wherein the first electrode is a cathode.

4. The detector of claim 1, wherein the first point and the second point are at opposite ends of the first electrode.

5. The detector of claim 1, further comprising a third contact, wherein the third contact is located at a third point on the resistive electrode

6. The detector of claim 5, further comprising a fourth contact, wherein the fourth contact is located at a fourth point on the resistive electrode

7. The detector of claim 1, wherein the resistive electrode is 0.5 – 10 cm long and 0.01 – 5.0 cm wide.

8. The detector of claim 1, wherein the light absorbing layer has spectral sensitivity in the visible spectrum.

9. The detector of claim 1, wherein the resistive electrode has a resistivity of 5Ω/square – 10 KΩ/square.

10. The detector of claim 1, wherein the donor semiconductive organic layer comprises copper phthalocyanine (CuPc).

11. The detector of claim 1, wherein the acceptor semiconductive organic layer comprises 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).

12. The detector of claim 1, further comprising an exciton blocking layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.

13. The detector of claim 12, wherein the exciton blocking layer comprises bathocuproine (BCP).

14. The detector of claim 13, wherein the BCP is doped with 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).

15. The detector of claim 1, further comprising a polymer layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.

16. The detector of claim 14, wherein the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS).

17. The detector of claim 16, wherein:

the donor semiconductive organic layer comprises copper phthalocyanine (CuPc);

the acceptor semiconductive organic layer comprises 3,4,9, 10-perylenetetra-carboxylic-bis-benzimidazole (PTCBI);

the exciton blocking layer comprises 2,9-dimethyl-4,7-diphenyl-1, 10-phenanthroline (BCP); and

the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrene-sulfonate (PEDOT:PSS).

18. The detector of claim 1, wherein the detector has an optical beam spatial resolution of less than 50 μm.

19. The detector of claim 18, wherein the detector has an optical beam spatial resolution of less than 20 μm.

20. The detector of claim 1, further comprising a third electrode wherein the third electrode is resistive and has a first point and a second point; a third contact in electrical contact with the first point on the third electrode; and a fourth contact in electrical contact with the second point on the third electrode, and wherein the third electrode is disposed near the first electrode.

21. An organic position sensitive detector comprising:

a first electrode, wherein the first electrode is resistive and has a first point and a second point;

a first contact in electrical contact with the first point on the first electrode;

a second contact in electrical contact with the second point on the first electrode;

a second electrode disposed near the first electrode; and

a semiconductive organic layer disposed between the first electrode and the second electrode, wherein the organic layer comprises at least one light absorbing material and wherein the detector is adapted for measuring a lateral photovoltage.

22. The detector of claim 21, wherein the semiconductive organic layer comprises a donor layer and an acceptor layer and has a hetero-junction between the donor layer and the acceptor layer.

23. The detector of claim 21, wherein the first electrode is an anode.

24. The detector of claim 21, wherein the first electrode is a cathode.

25. The detector of claim 21, further comprising a third contact, wherein the third contact is located at a third point on the resistive electrode

26. The detector of claim 25, further comprising a fourth contact, wherein the fourth contact is located at a fourth point on the resistive electrode

27. The detector of claim 21, wherein the resistive electrode has a resistance of 100Ω - 1000Ω.

28. The detector of claim 21, wherein the donor semiconductive organic layer comprises copper phthalocyanine (CuPc).

29. The detector of claim 21, wherein the acceptor semiconductive organic layer comprises 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).

30. The detector of claim 21, further comprising an exciton blocking layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.

31. The detector of claim 30, wherein the exciton blocking layer comprises bathocuproine (BCP).

32. The detector of claim 31, wherein the BCP is doped with 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).

33. The detector of claim 21, further comprising a polymer layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.

34. The detector of claim 33, wherein the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS).

35. A method of determining the position of incident radiation comprising:

obtaining a organic position sensitive detector (PSD), wherein the PSD comprises:

a first electrode, wherein the first electrode is resistive and has a first point and a second point;

a first contact in electrical contact with the first point on the first electrode;

a second contact in electrical contact with the second point on the first electrode;

a second electrode disposed near the first electrode; and

a semiconductive organic layer disposed between the first electrode and the second electrode, wherein the organic layer comprises at least one light absorbing material,

placing the PSD in the path of the incident radiation; and

measuring a current at the first contact and a current at the second contact, wherein the currents are used to determine the position of the incident radiation.

36. The method of claim 35, wherein there is no voltage applied to the PSD.

37. The method of claim 35, further comprising applying a voltage of between 0.0 and –2.0 volts.

38. The method of claim 35, wherein the semiconductive organic layer comprises a donor layer and an acceptor layer and has a hetero-junction between the donor layer and the acceptor layer.

39. The method of claim 35, further comprising measuring a current at a third contact and a current at a fourth contact, wherein the third contact and fourth contact are located on the resistive electrode.

40. The method of claim 35, wherein the detector response is substantially linear above 10 μW incident power.

41. The method of claim 35, wherein the beam tracking velocity is at least 1.0 m/s.